

Collective actions and the dynamic of agrifood system from the perspective of the Romanian small vegetable producers

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Abstract

The integration into the world trade and particularly along the chain of products with high value added, such as the vegetables chain, is considered as a promoter of growth and poverty alleviation (Aksoy and Beghin, 2005), even though this topic is subject to controversy. The paper's purpose is to assess the role of collective actions in farmers' participation in the Romanian supply chains, more exactly the possibility of farmers to adapt to the dynamic retail chains using new institutional economic theories. Having given the requirements imposed by retail chains to vegetable suppliers in terms of quantity, quality, frequency, food safety, it is expected that a small farmer cannot afford to participate individually in the retail chains due to high transaction costs, lack of scale and institutional changes required. In order to see the determinants of joining collective actions by farmers, binary logit/probit models were used. The results signal out a small degree of farmers' participation in collective actions. Also, they reveal a certain degree of uncertainty among stakeholders in terms of institutional arrangements and participation in collective action.

INTRODUCTION, RESEARCH PROBLEM AND OBJECTIVE

The agricultural sector – in particular, the vegetable sector - finds itself in a relatively weak negotiation position due to the low level of concentration from which farmers approach the market. This is a weakness that can only be overcome by resorting to collective actions. Further strengthening of the coordination and collaboration action between various actors of the supply chain can come from the collective actions (organizations and agreements), thanks to which opportunistic behaviour may be countered and reduced, while encouraging collective behaviour (Dell'Aquila et al, 2011). Collective actions may constitute a valid and useful counterweight by taking up a strategic role in restoring balance to market relationships, acting as a contractual power and for redistributing added value, and contributing towards models of cooperative behaviour.

Romania's production of vegetables is fragmented, mostly coming from the individual households (90%) and only 10% from the legal farms. The Romanian vegetable chain is characterized by uncertainty in terms of what vegetable to produce and where to sell and, it negatively impacts the farmers' revenues and investment decision. At present, in Romania 42% of grocery sales are made through modern retail chains out of which 25% is represented by hypermarkets, 9% supermarkets and 8% discounting stores. At the same time, in the recent years an increase of consumers' appetite for doing shopping in modern retailers has been noticed, i.e. 70% of consumers in the urban areas. In this context it is important to know whether collective actions are important for farmers to face the new challenges of modern retailers to fulfill their

requirements in terms of quantity, quality and frequency of deliveries. The paper employs a qualitative and quantitative analysis in order to assess the probability of farmers to participate in institutional arrangements such as collective actions. In this regard, the objective of the paper is to reveal the main characteristics of participating in collective actions in order to better cope with the high level of requirements imposed by retail chains to small producers which has been most often seen as a barrier to commercialization. At the same time, the participation in collective action such as producers and organizations groups may play a role in improving the institutional arrangements with the retail chains.

Following the EU integration, the vegetable supply chain seems the most negatively affected sector, due to the high share of imports and the farmers' impossibility or incapacity to maintain stable contractual relationship within the chain. In addition, many of them are not able to enter or form producers' groups or participate in other type of collective actions either because of lack of trust or willingness to cooperate. Also, the National Rural Development Program reveals an extremely low absorption of funds for the measure aimed at setting up producers group as well as an extremely small number of applicants.

REVIEW OF LITERATURE

In addition to the historical problem of low prices and profits faced by farmers, agrifood systems are undergoing profound changes, requiring institutional adaptation (Hobbs, 2004). One of the core ideas of New Institutional Economics (NIE) is that institutions matter, and therefore, they are important to lower transaction costs (North, 1995; Williamson, 2000). North (2000) emphasizes that informal institutions influence the development of formal ones and highlights the role of innovation to support the development of informal and formal institutions. An example of an informal institution may be the resistance of farmers to work interdependently given their traditional beliefs of independence (Boehije, 1996). North (1995) points out that while formal institutions may be changed relatively rapidly, informal institutions may take longer to evolve. Collective action can exist in different forms such as informal networks, cooperatives, producers groups, organizations and strategic alliances. In this research, special attention is given to collective arrangements especially to the producers groups that might facilitate the participation of small farmers in the retail chains. Regarding collective action, Bardhan (1989) emphasizes the high propensity of opportunism and free-riding problems in collective actions that may limit the development of institutions to bring common benefits. The author mentions the problems of unbalanced power among agents that NIE seems to ignore in the development of institutions. It is expected that collective actions in the form of institutional and organizational arrangements, help reduce transaction costs. Collective actions can contribute to increasing bargaining power of farmers to negotiate with their clients through the pooling of produce. Similarly, by bringing together resources farmers can access key assets that cannot be acquired on an individual basis.

While competition at the retail stage stimulate changes in formats of retailing and outlets, the tendency to concentration and consolidation also in upstream stages of supply chains creates a bias against small farms and supports forms of association at farm level stage. (Dell'Aquila et al, 2011). In the recent years, emerging causes of instability (market price volatility, overproduction, increasing costs of production, stagnating consumptions, growing fruit and vegetable imports as effect of bilateral/multilateral accords) add to structural weaknesses (sector fragmentation, and its weak bargaining power, versus retail concentration and agro-food industry competition), exacerbating the tense relationship in the fruit and vegetable supply chain (Dell'Aquila et al, 2011). Also, the requirements coming from retail chains have steadily increased. All these

requirements may mean further investments that small farms find difficult to realize on an individual basis. In many cases farmers simply do not have the knowledge or the money to make investments in equipment and logistics support to meet these requirements. Ongoing developments of supply chains imply a significant bias towards large farms. This makes collective action among individual farmers a further step to improve their situation. The problem is not only to concentrate supply and give producers a prerequisite necessary to start interacting within modern supply chains, but also to undertake contractual arrangements in order to successfully coordinate with packers, wholesalers and large retailers, with the purpose of optimizing operations, so that production will comply with demand, in particular with regard to product quality attributes. (Fischer et al., 2007; Camanzi et al., 2009).

It is important to note also the role of commodity branch association in organizing the supply chains, but in Romania a country where production is very fragmented and the supply is atomized, and where price volatility is extremely high due to weather variation, Romconserv, the only one commodity inter-professional association in this sector it is far from providing all support required by farmers and other actors in the sector. Commodity associations will not be able to tackle all agrifood chain issues. Indeed, the weight of farmers in the decisions of the association will be limited in a context of increasing agricultural price volatility, commodity associations can become a locus for voicing disagreements. Therefore, their effectiveness will depend on stakeholders' capacity to define a large area of convergence for the actions of the association, which should benefit all industry members (Cadilhon and Dedieu, 2011).

The sector shows a rate of organization that on average is at a relatively low level and very far from the objective of 60% established by the Common Market Organization: in 2006 it was 34% in the EU-25 and 35% in the EU-15 (Agrosynergie, 2008). After the EU enlargement of 2007 to Bulgaria and Romania, there seems to be an overall decrease, due to an organization rate below 1% in these two countries (Jacquin, 2010). The rate of organization is very heterogeneous among the Member States: it has risen to over 80% only in the Netherlands, Belgium and Ireland. In particular, in the case of the Netherlands the rate of organization is over 100% because of transnational producers' organizations. At the same time, the rate of organization shows a great difference between new and old Member States not only as percentage level, but also in terms of variation: the former (EU-10) varies from 6% in 2004 to 9% in 2007; the latter (EU-15) varies from 32% in 2004 to 39% in 2007 (Jacquin, 2010). For instance, the low negotiation power of Romanian producers and high transaction costs also contribute to the need to establish producers' groups to participate in collective actions. However, at present, in Romania, there are only 22 producers' groups and one organization, whose members total 711 individual farmers and 10 legal farms. Initially, in 2008, 45 producers' groups had been preliminarily recognized, yet in 2011 their licenses were withdrawn, and at present only 22 groups remained. Many farmers are unable to establish producers' groups or to participate in other types of collective actions due to the lack of confidence, bad memories related to communist cooperatives, or lack of willingness to cooperate. At the same time, the National Rural Development Program has a very low absorption of funds for the measure targeting the establishment of producers' groups (Measure 142: Setting up producers groups) and the number of applicants is low. However, the National Rural Development Network, started after signing a contract in 2010, with a 3-year delay is intended to be a platform for encouraging farmers' participation in different types of collective actions. Nevertheless, collective actions also face the methodological issues of measurement. Concerning the measurement of collective actions, given the scarcity of adequate literature, Codron and Lemeilleur (2011) draw on the framework set out by Hansmann (1996, 1998) which has the advantage of being generic and transaction-cost explicit. Codron and Lemeilleur (2011) make a

review of literature regarding the different type of proxies used to measure collective actions and costs. Thus, among costs of market contracting, there are costs related to ex-ante market power, costs related to transaction-specific investments and costs linked to asymmetric information. Among the costs of ownership, which may be high when they are widely shared, there are identified three kinds of costs: monitoring costs to exercise effective control over the company manager; collective decision-making costs strongly correlated with the heterogeneity of members' interests; and costs of bearing the risk associated with residual earnings. Ex-ante market power is usually measured by the following proxies revealing the level of competition: number of sellers per buyer, sales transacted by the seller and the buyer, number of potential buyers. Relevant ex-post market power proxies would be: the existence of transaction-specific investments such as specific input/equipment at the production level, and the farmer's dependence on the credit provided by the buyer. Cost of monitoring in cooperatives can be measured by the number of members or the distance between the member farms and the cooperative head office. Cost of collective decision-making will be influenced by the size and the heterogeneity of the group and by voting and entry rules (closed vs. open membership).

DATA AND METHODOLOGY

The paper is based on data provided by 240 farmers located in the S-E region of Romania following a survey conducted in this region in 2011. In total, 240 structured questionnaires were applied to farmers. Interviews were also conducted with 4 supermarkets, including 2 discounters (modern retailers which practice discounted prices) and farmers belonging to 4 producers groups. Among the investigated farmers, 34% of farmers cultivated vegetables on less than 1 ha, 51% of farmers cultivated vegetable for commercialization on areas of 1-5 ha, and 5% of farmers cultivated vegetables on areas between 10 and 50 ha. Due to space limitations, information on questionnaires and more details on the method are available upon request from the author. The sampling method was a random sample carried out in a traditional vegetable area where farmers have a commercial behaviour. Regarding the interviews with the representatives of supermarkets chains, these were chosen randomly based on their willingness to answer to my questionnaire. The 4 producers groups were chosen from a list of 22 producers group who were located in the investigated area. The analysis is both qualitative and quantitative and takes into consideration stakeholder answers to the questions regarding the type of attributes for joining the collective actions. In order to see the determinants of joining farmers in collective actions binary probit and logit models were used. Several proxy variables such as membership fee, number of organization services provided by producers groups, membership heterogeneity (trust in organization), importance of organization for selling (number of potential buyers), performance of organization are used in this research to attempt to measure collective action determinants. Codron and Lemeilleur (2010) present an extended summary of proxies chosen to characterize the categories of organization costs, which were presented in the literature review made for this research. Considering the models best fitted for this kind of research, in analysis of dependence when the dependent variable is discrete the most used models are the choice or probability models. According to Jula (2011), the probit and logit models are different with regard to the specification of their error distribution in the regression equation. In this type of models we admit the existence of a latent (unnoticeable) variable for which we can notice only the dichotomic achievement.

RESULTS AND DISCUSSION

The results of qualitative analysis, following the interviews with producers groups, show that the number of farmers participating in collective actions is not very high. The producers groups are

mainly composed of small farmers and sometimes legal companies dealing in vegetables are also members of the group. The results reveal that only 20% of their pooled production is sold directly to modern retail chains; the rest is sold to traditional wholesalers and en gross markets 40%, local open market 20% and 20% of the production is sold at farms' gate. Nevertheless, we have to bear in mind that these figures are representative at the level of the interviewed producer groups, while at the whole country level only 5% of vegetable production is sold through producers groups.

According to interviews with retailers the procurement of fruits and vegetables is often still organized at the level of the store which is responsible for the purchases of fruits and vegetables through contracts with local suppliers (mainly large legal entities or producer groups). However, in some cases also the purchases of vegetables are centralized through a distribution center. Regarding the support given to farmers by retailers, limited evidence was found of the existence of farm assistance programs offered by supermarkets. Interestingly, all producer group representatives indicate that the most important benefit of contracting with modern retailers or specialized wholesalers is that these partners offer written contracts, while the traditional wholesalers still work with oral contracts. Usually a written contract includes conditions on price, frequency and quantity of delivery and food safety and quality standards that need to be respected and they are more elaborated than contracts between farmers and traditional wholesalers. For example, while only 45 % of the contracts between farmers and traditional wholesalers include conditions on the frequency of deliveries, this is included in 94 % of the contracts between farmers and modern retailers (Table 1). For producers, the most important benefits of these written contracts are reducing the market risk and guaranteed sales.

Table 1: Contractual terms (% of the contracts that includes this)

	Modern retailer	Traditional wholesaler
Quantity	94 %	71 %
Frequency of delivery	94 %	45 %
Minimum quality requirements	91 %	50 %
Food safety requirement	79 %	45 %
Requirements related to size, shape or colour	70%	27 %
Price	45 %	27 %
Mode and speed of payment	91 %	50 %
Premiums for quality and/or large quantities	15 %	9 %
Penalties for not fulfilling the terms of the contract	42 %	20 %

Source: Own calculations based on stakeholders interviews

Information obtained from interviews confirms that there is a lot of heterogeneity on production segment and that the effects are mixed. In general, retailers indicate that they prefer to purchase fresh products, such as fruits and vegetables, from large legal entities. However, when this is not possible, they get supplied from small farmers by using a specialized wholesaler. The representatives of the producer group indicated several constraints for small farmers delivering to modern retailers. First, procurement mechanisms vary between retailers. Some modern retailers are found to usually pay three weeks or one month after the delivery of the products, which can be problematic for small farmers that do not have a financial buffer to overcome this period. Second, in order to be allowed to deliver to some large retailers, farmers have to pay an entrance fee, so called "shelf fee", which is often too high for small farmers. For example, the representative of the producer group indicated that the "shelf fee" can vary between 10 %-15% of the price that the farmer will receive from the modern retailer for his products. Already in 2008, the employer organizations and trade unions indicated that it is very difficult for small farmers to

deliver to modern retailers because they cannot supply sufficient quantities. They also indicate that the “shelf fees” that modern retailers charge are substantially higher for local producers that are only able to offer small quantities to the modern retailer compared to those delivering large quantities which makes it virtually impossible for small producers to deliver to a modern retailer. Finally, the producers and their representatives also mention that increasing quality standards (requirement of several certificates on chemical use) and the poor packaging and sorting infrastructure are important constraints for small farmers to deliver to supermarkets (Swinnen and Van Herck, 2010). Important to note with respect to quality requirements, is that there is no significant difference in the quality that supermarkets requested compared to the quality that discounters requested (both demand extra or/and first class products). Nevertheless they indicate that it is not impossible for small farmers to contract with modern retailers, but they emphasize the importance of cooperation between small farmers such that they are able to deliver sufficient quantities to the modern retailers. There can be an important role in this cooperation for the producer organizations as they already help farmers to connect to the market by providing assistance programs, such extension services and storage facilities, and establishing contacts between farmers and modern retailers. Finally, when discussing the dynamic of agrifood sector and the impact of retail investments on small and large farmers it is important to keep in mind it is primarily in the area of fresh fruits and vegetables that there is a potential direct relationship between the “supermarket” and the “farm”. The weak bargaining power of local producers contributes also to the efficiency of the producers groups. There are farmers that sell to a specialized wholesaler who in turn sell to a supermarket. This is the case of smaller farmers that can produce vegetables but have serious constraints to enter the retail chains by themselves. Other small farmers become members in producers group and therefore rely on collective action to overcome these constraints. These farmers typically receive support from the Romanian Rural Development Program, if they form producers groups. The support is represented by financial help to acquire/build individual assets such as irrigation systems and/or collective assets such as storage facilities with cold storage and transportation to deliver produce to supermarkets. In some cases the participant farmer sell aside the produce thus creating problems for the well functioning of the producers groups and rising the issue of “free riding” problem within collective actions. This is the most typical issues raised among small farmers.

Table 2. Organizational Characteristics of Farmers in Producers group

Variable	N	Mean	Std. Dev.
Problem of paying for membership	178	3.10	0.68
Performance of organization	178	2.67	0.64
Trust in organization	178	2.52	0.56
Importance of organization for selling	178	3.32	0.56
Number of organization services provided	178	3.16	0.54

Source: farm survey 2011

From the total sample of the survey, 66% of farmers are organized. A significant percentage of these farmers, compared with farmers who sell using traditional channels, pays membership to their organization, and gets several services from their producers group (Table 2). By participating in collective actions (formal producers groups) small farmers are reducing transaction costs. When farmers are organized, their probability of participating in the retail chains is significantly increased (table 3). One should bear in mind that the figures presented are based on interviews with farmers belonging to producers groups and this is why the results cannot be extended at the national level. Also, the qualitative analysis gives hints that there is a strong

propensity for selling aside from the producers group when prices obtained by using alternative marketing channels are higher and the free riding problem appears very often. Even though organization is highly important for participating in the retail chains, there are certain organization measure supports that positively affect farmer participation in the collective actions.

Table 3. Choice of marketing channel and organization by farmers (%)

Marketing Channel	Organization member		Total
	Yes	No	
Traditional channel	10.3	44.1	54.4
Retail chains	45.3	0.3	45.6
Total	55.6	44.4	100
Marketing channel	Membership payment		Total
	Yes	No	
Traditional channel	0.8	9	9.8
Retail chains	52.2	38	90.2
Total	53	47	100

Source: farm survey 2011

In order to determine the effect of certain services on the probability of participating in the retail chains by the mean of producers group probit and logit regressions are used. In this way the analysis will facilitate to find out the role of collective action in participating in retail chains. The results presented so far suggest the importance of organization for participating in the supply chains. Producers groups provide different kinds of supports to their members; therefore, it is important to identify and assess those supports that really have an effect on the main market channel used by farmers. In this regard, a logit and probit regressions, including organized farmers, in the form of probability of selling to the retail chains as a function of support measures were run. Organizational support regarding inputs and collection and distribution centers is highly significant for participating in supply chains (table 4).

Table 4. Effects of support measures provided to farmers by producers group

	Probit model		Logit model	
	Coefficient	Z statistic	Coefficient	Z statistic
Credit	0.02	0.05	3.37	0.16
Inputs	1.94	3.74	0.13	3.65
Training and technical support	0.45	1.40	0.85	1.47
Transport	1.09	2.51	1.86	2.51
Collection and distribution	1.42	3.25	2.62	3.15

N = 240

LR = 237; LL=-18.48; McFadden R²=0.86

The variable credit included in the regression is not statistically significant at the five percent level. The non-significant effect of the variable in the model may be explained by the fact that organizations provide these services less frequently. However, this variable is not always oriented to promote farmer participation in the retail chains, as is the case of marketing services and collection and distribution centre services which have a very clear target. Organizations traditionally provide inputs, training, technical assistance and assets oriented to the production process and support for commercialization. As pointed out by Berdegúe (2001), traditional agricultural development programs have been focused on "teaching" independent farmers how to

increase productivity. However, under the new agrifood systems institutional and organizational innovation is needed (Reardon and Barrett, 2000; Pinststrup-Andersen, 2002).

The results obtained suggest that providing input support and collection and distribution facilities are particularly important. Collection and distribution support are mainly associated with negotiation with clients. Small farmers do not negotiate directly with clients such as retail chains for two main reasons. First, individual farmers do not have enough scale to negotiate, and therefore it is too costly for them. Second, for supermarket chains it is difficult (too high transaction costs) to negotiate with a large number of individual farmers. Instead, for farmer and client convenience, farmer representatives such as producers' group administrators of farmer producers' groups do the negotiations. According to the survey, none of the small farmers is selling directly to retail chains, therefore, confirming the importance of collective action to participate in supply chain. Nevertheless, as already stated due to price volatility and some institutional arrangements regarding the position of the organization it may happen that the small farmers sell aside from the contract with the producers group, thus impeding a good functioning of producers groups. Nevertheless, one should not neglect that according to the results for the time being small farmers are benefiting more from input support than from collection and distribution support (table 4). Support for input is associated with help for establishing the crop and obtaining at a fair price all the inputs needed for production. This is an important support because individual small farmers lack managerial skills and bargaining power to negotiate with suppliers in the supply chain. Support for collection and distribution centers is also very important because it allows farmers to bring together their products for selling in the retail chains and improve their bargaining power with buyers. Nevertheless, producer groups may also not represent the best marketing channel for the participation of small farmers in the collective actions when the target of the collective effort is not market driven and when the prices they receive are smaller than what they could get by selling using traditional channels. As already said, there is a high tendency to sell outside producers groups when prices obtained are higher on alternative marketing channels.

CONCLUSIONS

The main results may signal out that there is a certain degree of farmers' participation in collective actions. Nevertheless, at the country level the number of participation in collective actions is extremely reduced. Marketing and collection and distribution center support offered by organizations have the specific objective to insert small farmers into the retail chain. From the model results the importance of transportation for choosing the market channels is significant. Many farmers are motivated to sell to middlemen at the farm gate, because the buyer provides transportation. First, transportation is expensive, and second is not always reliable. One of the main premises of NIE is that "institutions matter," and therefore, they can help reduce transaction costs. The results show the importance of collective action for participating in the retail chains. Participating in collective action, and furthermore, being a member of a producer group significantly increases the probability of selling in retail chains, supporting the hypothesis of farmers' perception that the higher the participation in collective action, the higher the probability of selling in this kind of market. At the same time, the qualitative results suggest that organization itself is not enough to facilitate the participation in the retail chains and many free riding problems occur. The qualitative results reveal that in Romania's case there is a high degree of uncertainty among stakeholders both in terms of institutional arrangements and participation in collective actions. The share of participation in collective actions is higher in case the institutional arrangement is initiated by a larger farm.

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